MILL CREEK BRIDGE
(Mill Creek Culvert at River Street)
Pennsylvania Historic Bridges Recording Project - II
Spanning Mill Creek at River St. (State Rt. 2004)
Wilkes-Barre
Luzerne County
Pennsylvania

HAER No. PA-501

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
1849 C Street, NW
Washington, DC 20240

HAER
PA
40-WILB,
7-

HISTORIC AMERICAN ENGINEERING RECORD

MILL CREEK BRIDGE
(Mill Creek Culvert at River Street)

HAER No. PA-501

Location:	Spanning Mill Creek at River St. (State Rt. 2004), Wilkes-Barre, Luzerne County, Pennsylvania.
USGS Quadrangle:	Pittston, Pennsylvania (7.5-minute series, 1994).
UTM Coordinates:	18/427280/4567800
Date of Construction:	1885.
Designer:	William V. Ingham (Wilkes-Barre City Engineer).
Builder:	Robert C. Mitchell (contractor, Plains, Pennsylvania).
Present Owner:	Pennsylvania Department of Transportation.
Present Use:	Vehicular bridge.
Significance:	This filled-spandrel stone arch bridge is distinguished by its 39'-0" span over Mill Creek with an impressive 32'-10" clear height. Unusual corbels at the spring line, used to support temporary centering, give evidence of the challenges faced in its construction. The bridge represents the legacy of William V. Ingham, the second generation of a family that dominated Wilkes-Barre public works in the nineteenth century. The city of Wilkes-Barre and Plains Township co-funded this replacement structure, a critical transportation link on the Susquehanna's east bank, in 1885. Remarkably well-preserved with most of its original wrought-iron railing intact, the Mill Creek Bridge was listed on the National Register of Historic Places in 1988.
Historian:	Justin M. Spivey, August 1998.
Project Description:	The Pennsylvania Historic Bridges Recording Project - II was co-sponsored during the summer of 1998 by HABS/HAER under the general direction of E. Blaine Cliver, Chief; the Pennsylvania Department of Transportation, Bureau of Environmental Quality, Wayne W. Kober, Director; and the Pennsylvania Historical and

Museum Commission, Brent D. Glass, Executive Director and State Historic Preservation Officer. The fieldwork, measured drawings, historical reports and photographs were prepared under the direction of Eric DeLony, Chief of HAER.

Introduction

Traveling north on River Street, from the city of Wilkes-Barre into Plains Township, one hardly notices a bridge at the city limits, let alone the ravine below. What appear to be fences alongside the road are actually the bridge's wrought-iron railings. Climbing vegetation blocks the view to either side, although even without greenery the ravine's depth conceals the creek at its bottom from passing motorists.

Mill Creek, which forms the boundary between these two municipalities on the Susquehanna River's North Branch, flows under River Street through a high stone arch. City records of 1885, the year of its construction, refer to the structure as "Mill Creek Culvert at River Street." Though the term "culvert" applies to any crossing of water under a road, the modern name of Mill Creek Bridge is more befitting a structure of its grand dimensions. The arch's span of 39'-0" and height of 32'-10" create an imposing opening.[1]

The bridge was designed by city engineer William V. Ingham and built by contractor Robert C. Mitchell, both long-term Luzerne County residents who shaped the growing city of Wilkes-Barre in the nineteenth century's closing decades. Mitchell, working against a deadline set by the county, built centering for the high arch over Mill Creek upon projecting corbels at the spring line instead of erecting falsework in the creek bed. Because he was paid per volume of stone laid, Mitchell also profited by eliminating overhead costs such as timber falsework. The corbels remain in place as one of the arch's distinguishing features and a reminder of Mitchell's time-saving and economic solution.

The River Road

The first European-descended settlers arrived in Pennsylvania's Wyoming Valley from Connecticut in 1762, to occupy land claimed by the Connecticut Susquehanna Company eight years earlier. According to H. C. Bradsby's *History of Luzerne County,* that first settlement was in Plains Township, "just above the mouth of Mill Creek."[2] Mill Creek, originally called Beaver Brook, flows into the Susquehanna River less than a thousand feet downstream from the site of the bridge. The settlers fled from their Mill Creek settlement in 1763, following retribution from

---

[1] Most dimensions from Pennsylvania Department of Highways, "Supplementary Bridge Record," 3 Apr. 1935 (bridge inspection file, BMS No. 40-2004-0070-1976, PennDOT District 4-0, Dunmore, Pa.); others from measurements taken by author.

[2] H. C. Bradsby, *History of Luzerne County, Pennsylvania* (Chicago: S. B. Nelson & Co., 1893), 629.

the Delaware Indians for a fire set at their chief's home.[3] Six years later they returned, and Nathan Chapman built the mill which gave the creek its present name.[4]

Even amidst the so-called Yankee-Pennamite War, a conflict with Pennsylvania settlers over competing claims, the Connecticut party managed to create a town. In 1769, Major John Durkee planned and founded Wilkes-Barre, naming it after two supporters of the American colonies in British parliament, Colonels John Wilkes and Isaac Barré.[5] Wilkes-Barre was one of the original five townships in what Connecticut called Northumberland County; the others were Hanover, Kingston, Pittston, and Plymouth.[6] Wilkes-Barre's Public Square, rotated 45 degrees to its grid at the intersection of Main and Market streets, was at the center of Durkee's plan. The rotated square remains the city's unofficial second symbol (after the official beehive in a circle) and a popular outdoor gathering place.

Soon after the establishment of Wilkes-Barre, other towns such as Pittston and Scranton arose on the banks of the Susquehanna and Lackawanna rivers. The first road to Pittston, along present-day Main Street, was constructed in 1772 and later extended to the Delaware River.[7] A roughly parallel route to Pittston along the Susquehanna called River Road (River Street within Wilkes-Barre city limits) was established at a later date. Both routes are important to transportation between Wilkes-Barre, Pittston, and points north. When the Mill Creek bridge at River Street was replaced in 1885, so was the Main Street bridge. However, because of the steep hill on Main Street descending toward Mill Creek, only River Street saw streetcar service north of the city limits.[8]

Although the mouth of Mill Creek was initially a Connecticut settlement, a Pennsylvania family controlled its ultimate development. Lieutenant Colonel John Mathias Hollenback arrived in the Wyoming Valley in 1770. After serving in the Revolutionary War, he established a chain of mercantile stores which eventually extended into New York. His son, George M. Hollenback, worked in the family business and shared his father's reputation for being "a noted

---

[3] Bradsby, *History of Luzerne County,* 629, asserted that the Iroquois set the fire and blamed it on the Connecticut settlers; more recent authors suggest that the Yankees did it. See John Beck, *Never Before in History: The Story of Scranton* (Northridge, Calif.: Windsor Publications, 1986), 13.

[4] Bradsby, *History of Luzerne County,* 629. In his *A History of Wilkes-Barre, Luzerne County, Pennsylvania,* vol. 2 (Wilkes-Barre: 1909), 693, Oscar J. Harvey wrote that the mill was built in 1771.

[5] Lockwood Greene Engineers, Inc., *Industrial Survey of the Wyoming Valley, Pennsylvania* (New York: Lockwood Greene Engineers, Inc., 1930), 146-47.

[6] Beck, *Never Before in History,* 16.

[7] Harvey, *A History of Wilkes-Barre,* 2:753.

[8] Harold E. Cox, *Wyoming Valley Trolleys: Street Railways of Wilkes-Barre, Nanticoke, and Pittston, Pennsylvania* (Forty Fort, Pa.: 1988), 43.

friend of public improvements."[9] The elder Hollenback evidently acquired a large quantity of land, because the next two generations of his family built their reputation by giving it away. In 1885, George established the Hollenback Cemetery Association on fifteen acres he owned west of River Street and south of Mill Creek.[10] John Mathias' grandson, John W. Hollenback, extended the cemetery by five acres in 1887. He also donated land in 1874 on the east side of River Street for a city hospital that opened two years later.[11] Wilkes-Barre General Hospital still stands, many additions and alterations later, to the southeast of the Mill Creek Bridge.

John W. Hollenback was one of the founding investors of Wilkes-Barre's first electric railway. He joined two electric doorbell installers and insurance broker Henry H. Derr to incorporate the Wilkes-Barre and Suburban Street (WB&SS) Railway Company in 1887.[12] Derr and Hollenback both owned land along the route, which began service at the end of March 1888 on a loop of track which passed the hospital at the corner of River and Chestnut Streets. Hollenback profited further when the line was extended across Mill Creek at Washington Street late that year. To draw ridership, the company leased land from him for a pleasure ground called Suburban Park (now Hollenback Park).[13]

Although the line was placed on River Street because of a steep hill on Main Street, the WB&SS may have been eyeing a new stone arch bridge constructed by the city over Mill Creek in 1885. Operation of the WB&SS had been leased to the Wilkes-Barre and Wyoming Valley Traction Company in 1891, but the original owners continued to expand the line. At a meeting in October 1892, company directors resolved to extend the line along River Street through Plains and Jenkins townships to Pittston. President Charles A. Miner was "authorized . . . to arrange with the Wilkes-Barre and Wyoming Valley Traction Company for the construction of the extension."[14] The city passed an ordinance authorizing the laying of tracks just two weeks later, but it would take more than a year, until February 1894, before streetcars crossed Mill Creek at River Street.[15] Streetcars operated by several different companies used the bridge continuously for the next forty-three years.

---

[9] Horace E. Hayden, *Genealogical and Family History of the Wyoming and Lackawanna Valleys, Pennsylvania* (New York: Lewis Publishing, 1906), 331-2, 357.

[10] Harvey, *A History of Wilkes-Barre,* 4:2032.

[11] Harvey, *A History of Wilkes-Barre,* 4:2032, 4:2110.

[12] Cox, *Wyoming Valley Trolleys,* 9.

[13] Cox, *Wyoming Valley Trolleys,* 9.

[14] Wilkes-Barre & Suburban Street Railway Co., "Minute Book and Ledger 1887-1929," 24 Oct. 1892, Wyoming Historical and Geological Society, Wilkes-Barre, Pa.

[15] City of Wilkes-Barre, Council Minutes, 1:358 (8 Nov. 1892), City Clerk's Office, City Hall, Wilkes-Barre, Pa. Cox, *Wyoming Valley Trolleys,* 45, gives the opening date of 23 Feb. 1894.

New Bridges Over Mill Creek

As the communities between Wilkes-Barre and Scranton melded into a conurbation stretching for more than twenty miles along the Susquehanna's east bank, creek crossings became the critical links in a linear system. In order to support the growing traffic of people and goods throughout the region, each municipality had to periodically replace its outdated bridges. Where water features also formed jurisdictional boundaries, it was in the interest of both neighbors to maintain the crossing. Wilkes-Barre, which had become a city in 1871, and Plains Township ultimately cooperated in replacing a bridge over the deep Mill Creek ravine at River Street. Together they petitioned Luzerne County for financial assistance with the bridge, but unlike requests from more rural areas, the county did not foot the entire bill.

Mill Creek was first spanned by a structure on stone abutments, probably a wood or iron truss, whose date of construction could not be ascertained. On 8 August 1884, the Wilkes-Barre city council resolved that its Streets Committee should meet with Plains Township officials to discuss repairs to Mill Creek bridges at Main and River streets.[16] This began a long series of negotiations which would, more than a year later, result in new bridges at both locations.

Just one week later, the Streets Committee returned from its meeting and persuaded the other council members that a new bridge was needed. The city attorney was instructed to "prepare a petition" for a new bridge superstructure.[17] Evidently the council had determined that the abutments were sound. No action was taken for two months, until the council again resolved to petition Luzerne County, this time specifically mentioning an "iron bridge" at River Street.[18] The successful petition earned a county appropriation of $3000. Although Plains Township had agreed to an iron bridge just three days earlier, news arrived at the 18 November city council meeting that the township now wanted a stone arch.[19]

The reasons for this sudden reversal are unknown; however, one can speculate about the arguments on either side. An iron bridge, especially in the era of American bridge-fabricating companies, would have provided an economic structure spanning Mill Creek. But permanence was important to Wilkes-Barre, a city which — despite frequent devastation by flooding — maintained a penchant for monumental structures. Forty years later, this would culminate in a highly ornamental concrete bridge across the Susquehanna designed by renowned New York City architects Carrère and Hastings.[20] A stone arch at River Street, though more expensive, would endure traffic loads for decades to come, and resist the floods which plagued Mill Creek.

---

[16] City of Wilkes-Barre, Council Minutes, D:211 (5 Aug. 1884).

[17] City of Wilkes-Barre, Council Minutes, D:223 (12 Aug. 1884).

[18] City of Wilkes-Barre, Council Minutes, D:258 (14 Oct. 1884).

[19] City of Wilkes-Barre, Council Minutes, D:275 (18 Nov. 1884).

[20] Pennsylvania Department of Transportation, *Historic Highway Bridges of Pennsylvania* (Harrisburg: Pennsylvania Department of Transportation, 1986), 176.

The constant references to a "heavy stone arch culvert" in city records reflect the expectations of its solidity. It seems that leaders in both jurisdictions were willing to pay for a more durable crossing, and city engineer William V. Ingham was asked to prepare plans for a stone structure.

In early December 1884, the Wilkes-Barre council passed a resolution increasing the city's debt by $6000 to finance the construction of bridges at River and Main streets. Furthermore, the city accepted a bid from contractor Robert C. Mitchell, of Plains, to construct the bridge. For $6.50 per cubic yard of stone, minus $2.00 per cubic yard of stone re-used from the existing abutments, he agreed to construct"a heavy stone arch culvert over Mill Creek at River Street ... provided it is understood that said bid covers the total expense of coffer dams, excavations and all other necessary expense." The city and township would split the cost of filling the arch spandrel and approaches under a separate contract.[21] Although a new bridge appeared to be on its way, this first attempt was premature. The contract with Mitchell was be rescinded at the next meeting, pending an investigation of whether county funds could be used for building a stone bridge instead of an iron one.[22]

Two months passed, during which city and township officials met again and decided unanimously in favor of a "heavy stone arch culvert."[23] On 14 March 1885, a contract was signed by Mitchell and leaders from Wilkes-Barre and Plains. This document specified the terms of payment. The city engineer would estimate the volume of stone laid by Mitchell each month. Wilkes-Barre and Plains Township would each pay 45 percent of the monthly estimates and half of the remaining 10 percent upon completion. Other terms specified that the bridge was to be completed by 15 July of that year, and that Mitchell could not hire subcontractors without permission.[24] The county evidently consented to appropriate funds for a stone arch, the swift completion of which was a priority. Six days after signing this contract, Wilkes-Barre and Plains entered into an agreement with Luzerne County, whereby the county would pay $3000 upon completion of the bridge, minus $10 for every day after 15 July if the bridge was not completed.[25] Evidently, the latter clause was ignored. The *Wilkes-Barre Record* reported the appointment of viewers Henry Vanscoy, L. C. Darte, and Calvin Dymond on 28 September, two and a half months after the deadline for completion. The city accepted the bridge three days later.[26] Although Mitchell's work was completed behind schedule, the city received its full

---

[21] City of Wilkes-Barre, Council Minutes, D:282-5 (2 Dec. 1884).

[22] City of Wilkes-Barre, Council Minutes, D:299-303 (6 Jan. 1885).

[23] City of Wilkes-Barre, Council Minutes, D:316 (3 Feb. 1885).

[24] City of Wilkes-Barre, Council Minutes, D:324-5 (14 Mar. 1885).

[25] City of Wilkes-Barre, Council Minutes, D:349-50 (20 Mar. 1885).

[26] "Court Proceedings," *Wilkes-Barre Record,* 28 Sep. 1885, 4; 1 Oct. 1885, 4.

$1500 share on 3 November.[27] A search through council minutes did not uncover any evidence of the city asking for an extension of the deadline.

The Ingham Family

Wilkes-Barre city engineer William V. Ingham prepared the specifications for the 14 March contract with Mitchell, revising them when the city signed an agreement with Luzerne County. The two versions differ in minor details, and only the second provides overall dimensions for the structure, but both show Ingham's meticulous attention to detail. Precise wall thicknesses and mortar mixtures (2:2:2 cement to lime to sand) bespeak a trained engineer, while minimum dimensions of stones indicate experience in dealing with contractors. For instance, Ingham not only specified that coping stones be 2'-5" wide, 6" thick, and a minimum of 2'-6" long, but also prescribed their installation: they were to be secured with dowels and pushed tightly together on a bed of mortar.[28] In the second version his instructions encompass even more detail, demanding drafted edges and a V-groove cut underneath the outside edge.[29]

William V. Ingham was the second generation in a family of engineers which served Wilkes-Barre during the nineteenth century. His father, Charles F. Ingham, came to the Wyoming Valley from Dublin via Philadelphia in 1822. The elder Ingham studied medicine, taught school, and traveled to Philadelphia to hear lectures at the University of Pennsylvania. His chosen occupation, however, was civil engineering, "for which he was especially adapted by nature," according to one regional history.[30] Among the accomplishments listed therein are supervising canal and railroad construction, including the Pennsylvania and Delaware and Hudson Connecting Railroad which passes over River Street just north of the Mill Creek Bridge, building the Wilkes-Barre Water Company works, and teaching engineering to his son:

> Dr. Ingham was an engineer when Wilkes-Barre was only a borough, and both he and his son, William V. Ingham, have been connected with the surveyor's office for nearly a half century, during which time nearly thirty miles of streets have been paved ... also some sixty miles of sewers were put in.[31]

The younger Ingham was born in Wilkes-Barre in 1846 and grew up learning engineering from his father, "and when his course of instruction was finished he needed no further schooling

---

[27] City of Wilkes-Barre, Council Minutes, D:486 (3 Nov. 1885).

[28] City of Wilkes-Barre, Council Minutes, D:326-7 (14 Mar. 1885).

[29] City of Wilkes-Barre, Council Minutes, D:350-2 (20 Mar. 1885).

[30] Horace E. Hayden, *Genealogical and Family History of the Wyoming and Lackawanna Valleys, Pennsylvania,* vol. 1 (New York: Lewis Publishing Co., 1906), 331.

[31] Hayden, *Genealogical and Family History,* 332.

in that profession...."[32] Although this vanity biography praise is suspect, the father-and-son team seems to have satisfied the developing city's engineering needs. William worked with his father, building several railroads and two bridges across the Susquehanna before being elected city engineer himself in 1877.[33] Except for brief stints with his father in New Jersey, Ingham seems to have been a lifelong resident of Wilkes-Barre. City directories list him in the position of city engineer until 1906.

Constructing the Bridge

A contractor named Robert C. Mitchell, from Plains Township, was awarded the contract for the Mill Creek Bridge — twice — in 1885. His brother, George W. Mitchell, co-signed a bond on 12 March, but is not mentioned subsequently.[34] Their father was a farmer, "coal operator," and land speculator.[35] His sons may have picked up construction experience in their father's mines. Robert was born in Nova Scotia, to where his father had emigrated from Scotland, in 1840; the family moved to Luzerne County when Robert was nine years old.[36]

Like Ingham, Mitchell seems to have lived in the area for most of his life. After serving in the Civil War, he started contracting locally in 1872. His brother George was also "an extensive and successful contractor," and the two worked together at times under the name Mitchell Brothers.[37] However, because city records of the Mill Creek bridge at River Street refer only to Robert, the partnership had evidently dissolved by 1885. In that same year, Mitchell built abutments for a bridge across Mill Creek at Main Street which were fitted with an iron truss superstructure.[38] The latter structure has since been replaced by a reinforced concrete bridge. Mitchell seems to have been responsible only for masonry on the River Street bridge; a separate contract covered filling the arch spandrel and approaches.[39]

City records do not record Mitchell's reaction to the cancellation of the first contract for the Mill Creek Bridge. However, once the second contract was signed and work began in earnest, he was paid regularly and completed the structure in about six months. The city issued its first payment of $1229.56 on 2 June. Subsequent payments of $2682.92 and $2393.33 were

---

[32] Hayden, *Geneologicol ond Fomily History,* 333.

[33] Hayden, *Geneologicol ond Fomily History,* 333.

[34] City of Wilkes-Barre, Council Minutes, D:327 (14 Mar. 1885).

[35] Bradsby, *History of Luzerne County,* 1187.

[36] Bradsby, *History of Luzerne County,* 1187.

[37] Bradsby, *History of Luzerne County,* 1187. For the Mitchell Brothers, see Oscar J. Harvey and Ernest G. Smit, *A History of Wilkes-Borre, Luzerne County, Pennsylvonio,* vol. 6 (Wilkes-Barre: 1930), 370.

[38] City of Wilkes-Barre, Council Minutes, D:465 (25 Sep. 1885).

[39] City of Wilkes-Barre, Council Minutes, D:344 (1 Apr. 1885).

made from the Wilkes-Barre's bridge account on 7 July and 4 August. Either anticipating the $1500 payment from Luzerne County or because of a mistake in Ingham's estimate, the city emptied its bridge account and soon had to shift funds around to continue payments. The 1 September payment of $2216.84 required a transfer from the street account into the bridge account.[40] Another transfer was necessary for the final payment of $3091.05 on 6 October, which included the city's half of the ten percent at completion.[41] Totaling these figures, and doubling them to account for Plains Township's share, Mitchell received a total of $11,613.70. Following the bridge's completion, Wilkes-Barre passed a $5500 bond issue to cover the cost of completing the bridges and subsequently returned funds to the streets account.[42]

Description

The Mill Creek Bridge is a filled-spandrel stone arch bridge. Its single arch span, according to sketches in PennDOT inspection files, is 39'-0" long.[43] On the bridge's eastern face, a straight side wall 130'-0" long terminates in 25'-0"-long curved wing walls at either end. The western face was presumably constructed with similar dimensions, but a portion of the northwestern wing wall was removed at some time prior to 1941 for a driveway into the adjacent Pennsylvania Power and Light electrical substation. The vertical distance from springing to crown is 16'-10", with the spring line 16'-0" from the water line. A circular arc fit to these dimensions has a radius of approximately 19'-9". (Interestingly, the city's specifications called for a 36'-0"long arch with a radius of 21'-0".[44]) From arch crown to top of coping, the parapet wall is 12'-6" high. From outside of parapet to outside of parapet, the structure measures 39'-5" wide.

The arch fill measures 8'-2" from the extrados of the 2'-0"-thick arch ring to the road surface. This may differ from the original dimension, considering that the roadway has been reconstructed several times. Specifications for the original road surface call for red sandstone slabs at least 3" thick and 10" long, set on end in a 10"-thick bed of sand over a 6"-thick bed of coal dirt.[45] However, a 1935 inspection drawing, made when streetcars still operated over the bridge, shows an 1'-6"-thick concrete roadway 30'-0" wide.[46] This had been covered with asphalt and the tracks abandoned by 1941, when the state highway department straightened River Road

---

[40] City of Wilkes-Barre, Council Minutes, D:459 (1 Sep. 1885).

[41] City of Wilkes-Barre, Council Minutes, D:477 (6 Oct. 1885).

[42] City of Wilkes-Barre, Council Minutes, D:491 (3 Nov. 1885).

[43] Pennsylvania Department of Highways, "Supplementary Bridge Record."

[44] City of Wilkes-Barre, Council Minutes, D:350 (20 Mar. 1885).

[45] City of Wilkes-Barre, Council Minutes, D:350-2 (20 Mar. 1885).

[46] Pennsylvania Department of Highways, "Supplementary Bridge Record."

north of the bridge.[47] The streetcar tracks either have been removed or paved over, because the current road surface is uninterrupted asphalt.

Yellow sandstone is used exclusively in the arch ring and predominantly in the remainder of the structure. The parapets, however, are capped with red sandstone slabs 2'-5" wide. Additional coarse red sandstone blocks occur throughout, with the greatest concentration at the base and along the embankments. A previous bridge with stone abutments stood at this site, and the contractor was allowed to re-use that material.[48] Given the position of coarse red sandstone in the present structure, the stone most likely comes from the previous abutments, and the contractor either left it in place or used it first. Except for the arch ring and coping, the stone is rock-faced and shaped into roughly rectangular blocks. Irregular corners are filled with smaller stones. Although the structure presently appears to be dry-laid masonry, closer inspection reveals that the stones are laid with mortar between. Time, weather, and repeated flooding have evidently washed out the soft mortar; this effect becomes more pronounced toward the stream bed.

Contrasting with rock-faced masonry elsewhere, the arch ring contains the most highly finished stone in the bridge. Even so, the blocks in the arch ring received only a hammer finish. The 2'-0"-deep voussoirs have a rock finish on their vertical face, with a 1" draft around the edges, as specified by Ingham.[49] Although the voussoirs are consistently about eighteen inches thick, the interior of the barrel displays some interlocking of courses. Each of the blocks in the arch ring is at least twice as wide as it is thick. Many, including the projecting keystones, are several times wider.

A short distance below the arch's spring line, eight roughly rectangular corbels project from each wall. Along with the combination of length and height, these are the Mill Creek Bridge's distinctive masonry features. The corbels vary widely in size, but average around 30" wide and 15" high. Projecting about 15" from the wall, the corbels were evidently used to support temporary centering high above the creek bed. As such, they would have been an alternative to the time-consuming construction of temporary foundations and scaffolding 16 feet high. Because Mitchell was paid per volume of stone laid, with incidental expenses such as timber coming out of his profits, the corbels made economic sense as well.

The corbels could not have supported much weight until surcharge loading — as much of the arch barrel as would support itself — was applied. Only after the corbels were locked in place under several courses of stone could the centering be constructed. Even so, according to Dr. Thomas E. Boothby, professor of architectural engineering at Pennsylvania State University, timber centering for such a long span would have been extremely heavy and difficult to

---

[47] Pennsylvania Department of Highways, "Drawings for Construction, Appropriation and Condemnation of Right of Way, Route No. 5 Section No. 6 in Luzerne County," aperture card files, PennDOT District 4-0, Dunmore, Pa.

[48] See contracts in City of Wilkes-Barre, Council Minutes.

[49] City of Wilkes-Barre, Council Minutes, D:326-7 (14 Mar. 1885).

construct.[50] It is unclear whether Mitchell ever intended to remove the projecting part of the corbels and finish them flush with the surrounding wall. Perhaps, past his deadline and in a hurry to finish, he moved on to other parts of the bridge. For whatever reason, the corbels remain intact, telling a story of the arch's construction.

Atop the bridge, the coping's red sandstone slabs extend the full width of the parapet and are finished smooth on their top face. Slabs are butted closely together, indicating a reasonably smooth finish on the ends. The sides of the coping, however, bear the same rock facing as the walls. Though Ingham's specifications called for drafted edges and a V-groove under the outside edge, the contractor did not provide them. Because of the rush to complete the bridge, Mitchell may have omitted these minor details.

A wrought iron fence, 3'-5 1/2" tall, is anchored in holes drilled into the stone coping at intervals. Wrought-iron rods 5/8" in diameter form the pickets and pass through two 1 3/4" x 1 3/4" angles (oriented with one leg down and facing the roadway), at 5" and 2'-5" above the coping. The holes through the angles appear to have been drilled; the pickets are peened on the underside of the lower angle. Every other picket splits near its top into two scrolls, each of which is tied with an iron band to neighboring pickets. These split rods, because of the sawing required, make the fence a remarkable piece of iron craftsmanship. Spear-like finials 4'-1/2" tall crown the pickets to which the scrolls are tied. The finials were probably cast by pouring iron into a mold around the picket.[51] The fence is supported by wrought-iron bars, 5/8" x 1'-3/4", with their narrow face turned toward the roadway. Above the top rail, the bars' rectangular section abruptly changes to a 5/8"-rod with a finial. An angled 5/8"-diameter wrought-iron strut, bolted through its flattened end to each upright bar, is anchored into the coping behind the fence. Octagonal cast-iron end posts, which appeared as recently as a 1972 inspection photograph, have since been removed from the railing.[52] Only round base plates, held down by square nuts, remain atop the wing walls near their ends.

In addition to the 360 linear feet of fence fabricated for the bridge, the same shop seems to have produced a considerable amount of fencing for the adjacent Hollenback Cemetery. A wrought-iron fence atop a red sandstone wall, identical to the bridge railing except for *fleur-de-lis* finials, marks the cemetery's northern boundary. (The fence on the cemetery's east side is of an entirely different design.) Unfortunately neither the railing nor the blacksmith responsible are mentioned in city records for the bridge; it may even have been added at a later date.

---

[50] Thomas E. Boothby, telephone conversation with author, Aug. 1998.

[51] Iron-working expert Ben Shackleford indicates that this would be the easiest way to mass-produce the pickets.

[52] Pennsylvania Department of Transportation, inspection report, 15 Dec. 1972, BMS No. 40-2004-0070-1976, bridge inspection files, PennDOT District 4-0, Dunmore, Pa.

Subsequent Alterations

On 15 May 1937, the last streetcar ran across the Mill Creek Bridge. The line to Pittston had been abandoned, and a section of track between Midvale and Plainsville was removed for straightening of River Road, then known as Legislative Route 5.[53] Streetcar tracks remained on the bridge itself until at least 1941, when they appeared on a state highway department plan for straightening the portion of River Road just north of the city line.[54] This same plan shows the driveway at the northwest corner of the bridge, and a "Stone Mon[ument]" between the tracks at the city line.[55] There is no stone marker visible in the roadway at present, however.

The Mill Creek Bridge has survived with a minimum of alterations; however, its condition clearly shows its age. Saplings and vines have taken root between the stones on the east spandrel wall and even in the arch ring. A longitudinal crack in the arch barrel alarmed at least one local resident.[56] According to the Pennsylvania Department of Transportation, the crack does not endanger the structure and "has not significantly increased in size since it was discovered in 1984."[57] The department is currently considering solutions to scour damage at the eastern corner of the north abutment. Nonetheless, the bridge's continued survival attests to the solidity of its construction.

Conclusion

Despite the rush to construct it, the Mill Creek Bridge outlasted the streetcars which once ran over it. This critical link along the east bank of the Susquehanna still carries modern traffic loads without a posted weight limit. Designed by city engineer William V. Ingham, the bridge exemplifies his family's engineering contributions in Wilkes-Barre. The structure is distinguished by its high arch, which was constructed quickly and economically by supporting the centering on projecting corbels instead of the creek bed. Although local contractor Robert C. Mitchell constructed the bridge's masonry, the blacksmith responsible for the unusual wrought-iron fence atop its parapets remains unknown.

---

[53] Cox, *Wyoming Valley Trolleys,* 47.

[54] Pennsylvania Department of Highways, "Drawings for Construction."

[55] Harvey, *A History of Wilkes-Barre,* contains a photograpb of a stone arch bridge over Mill Creek, which strongly resembles the River Street span. Atop the bridge is what appears to be a stone pillar (as opposed to the flat stone in the 1941 drawings). Further research, or the original photograph, might shed light on this issue.

[56] Michael Rodack, "Resident to PennDOT: Check Mill Creek Span," editorial in Wilkes-Barre *Citizen's Voice,* n.d.

[57] Pennsylvania Department of Transportation, response to Michael Rodack letter in Wilkes-Barre *Citizen's Voice,* 25 Jul. 1988, BMS No. 40-2004-0070-1976, bridge inspection files, PennDOT District 4-0, Dunmore, Pa.

SOURCES CONSULTED

Published

Beck, John. *Never Before in History: The Story of Scranton.* Northridge, Calif.: Windsor Publications, 1986.

Bradsby, H. C. *History of Luzerne County, Pennsylvania.* Chicago: S. B. Nelson & Co., 1893.

"Court Proceedings." *Wilkes-Barre Record,* 28 Sep. 1885, 4.

"Court Proceedings." *Wilkes-Barre Record,* 1 Oct. 1885, 4.

Cox, Harold E. *Wyoming Valley Trolleys: Street Railways of Wilkes-Barre, Nanticoke and Pittston, Pennsylvania.* Forty-Fort, Pa.: 1988.

Harvey, Oscar J., and Ernest G. Smith. *A History of Wilkes-Barre, Luzerne County, Pennsylvania.* 6 vols. Wilkes-Barre: 1909, 1930.

Hayden, Horace E., et al. *Genealogical and Family History of the Wyoming and Lackawanna Valleys, Pennsylvania.* New York: Lewis Publishing Co., 1906.

Hughes, M. V. *History of Plains Township.* Plains, Pa.: Plains Rotary Club, 1969.

Lockwood Greene Engineers, Inc. *Industrial Survey of the Wyoming Valley, Pennsylvania.* New York: Lockwood Greene Engineers, Inc., 1930.

Pennsylvania Department of Transportation. *Historic Highway Bridges of Pennsylvania.* Harrisburg: Pennsylvania Department of Transportation, 1986.

Rodack, Michael. "Resident to PennDOT: Check Mill Creek Span." Editorial in Wilkes-Barre *Citizen's Voice,* n.d.

Roe, F. B. *Atlas of the City of Wilkes-Barre, Luzerne County, Pennsylvania.* Philadelphia: F. B. Roe, 1882.

Rohrbeck, Benson W. *Wilkes-Barre Railways Company.* Pennsylvania traction series. West Chester, Pa.: Traction Publications, 1975.

Sanborn Map Company. *Atlas of Wilkes-Barre, Pennsylvania.* New York: Sanborn Map Co., 1923.

Unpublished

Boothby, Thomas E., professor of architectural engineering at Pennsylvania State University. Telephone conversation with author, Aug. 1998.

City of Wilkes-Barre. Bridge contract file, No. 150. City Engineer's Office, City Hall, Wilkes-Barre, Pa.

_____. Council Minutes. City Clerk's Office, City Hall, Wilkes-Barre, Pa.

Pennsylvania Department of Highways. "Drawings for Construction, Appropriation and Condemnation of Right of Way, Route No. 5 Section No. 6 in Luzerne County." Aperture card files, PennDOT District 4-0, Dunmore, Pa.

_____. "Supplementary Bridge Record," 3 Apr. 1935. BMS No. 40-2004-0070-1976, bridge inspection files, PennDOT District 4-0, Dunmore, Pa.

Pennsylvania Department of Transportation. Inspection report, 15 Dec. 1972. BMS No. 40-2004-0070-1976, bridge inspection files, PennDOT District 4-0, Dunmore, Pa.

_____. Response to Michael Rodack letter in Wilkes-Barre *Citizen's Voice,* 25 Jul. 1988. Bridge inspection file, BMS No. 40-2004-0070-1976, PennDOT District 4-0, Dunmore, Pa.

Wilkes-Barre & Suburban Street Railway Co. "Minute Book and Ledger 1887-1929." Wyoming Historical and Geological Society, Wilkes-Barre, Pa.